LETTER

FROM THE

POSTMASTER GENERAL,

IN ANSWER TO

A resolution of the Senate of February 23, relative to the establishment of a telegraph in connexion with the postal system.

JUNE 4, 1866.—Referred to the select committee on incorporating a national telegraph company, and ordered to be printed.

POST OFFICE DEPARTMENT,
Washington, June 2, 1866.

SIR: In answer to the resolution of the Senate relating to the establishment of a telegraph in connexion with the postal system, I have the honor to communicate detailed replies to interrogatories made by myself from experts in telegraphy.

1. From Henry J. Rogers, telegraphic engineer.

2. From George B. Prescott, author of the work on "The History, Theory, and Practice of the Electric Telegraph," published in 1860.

3. From the executive officers of the "American," "Western Union," and "United States" Telegraph Companies.

It will be seen from these communications that the subject is fully discussed, while they contain much valuable information as to the cost of constructing and operating lines, and the average receipts for several years of the principal telegraph corporations of the United States.

As the object of the Senate, in referring its resolution to this department, was to ascertain facts to enable it to form an intelligent judgment on the expediency of making the telegraph a part of the postal system, and as the accompanying replies furnish such facts in large measure, I do not deem it important to express at any length my individual opinions on any branch of the subject.

The resolution contemplates the establishment of the telegraph along the principal mail routes only. I confine my estimates, therefore, to railroad lines.

The mails are now transported by rail 32,112 miles, to which will be added, on the completion of the Pacific railroad, say 2,000 miles—making, in all, 34,112 miles of railway service. Estimating two-thirds of this distance as covered by the principal mail routes, within the meaning of the Senate resolution, the telegraph would be required for 22,741 miles, costing for construction of a single wire line, at $150 per mile, $3,411,150. But as a three-wire line will not be above the average of the facilities required on the principal mail routes to accomplish any practical purpose in aid of the Post Office Department, it is safer to estimate the construction upon that basis, rather than upon a single wire, which will increase the cost to $300 per mile, or $6,822,300. The cost of construction of a six-wire line, I estimate at $580 per mile, with 30 poles to the mile. No allowance of extra expenses for running through cities, nor for

submarine cables. The annual cost of maintaining lines, salaries, repairs, &c., included, I estimate at 10 per cent. on cost of construction, and the depreciation of all kinds at 8 per cent. per annum.

Experts differ in opinion as to the durability of telegraph lines. No certain estimate can be made, as their permanence necessarily depends on the character of the materials used in their construction, the care with which they are managed, climate, and other local causes referred to in the accompanying replies.

I do not submit estimates of receipts, gross or net, which will depend so largely on the manner in which the system will be managed to secure or lose the public confidence, and be so much affected by the character and extent of the competition of private organizations that I would regard any estimate too uncertain to be relied upon.

As the result of my investigation, under the resolution of the Senate, I am of the opinion that it will not be wise for the government to inaugurate the proposed system of telegraphs as a part of the postal service, not only because of its doubtful financial success, but also its questionable feasibility under our political system.

I am, very respectfully, your obedient servant,

W. DENNISON,
Postmaster General.

Hon. LAFAYETTE S. FOSTER,
President pro tempore U. S. Senate.

BALTIMORE, *March* 10, 1866.

SIR: In reply to your note of the 5th instant, I have the honor to make the following statement:

1. I herewith submit a rough-mapped system of telegraph, embracing all the prominent commercial cities of the United States, giving to each place two independent routes, so as to insure telegraphic communication at all times. By referring to the red lines of the map each route can be readily traced, and which I estimate in the aggregate at 12,000 miles of telegraph. In selecting the routes I have endeavored to place Washington, or all the departments, in communication with the capital and principal seaport of each State, or where the bulk of telegraphic business originates.

2. As regards "the cost of construction and engineering," I have based my estimate with a view to the construction of the lines in the most permanent manner, far superior, in fact, to the lines which have been constructed by private companies. The average cost of the proposed lines at the present price of material, embracing at most six wires on the main routes, would average eight hundred dollars per mile, making the total cost of the lines, with instruments and batteries included, upwards of ten millions of dollars. While on the subject of construction it would be desirable to consider the policy of constructing subterranean lines on some of the main routes, say from Boston to Washington, as lines of that character have been successfully used in England for the past ten years.

3. In answer to your inquiry "how the system can be operated most effectually at the least expense to the government," I have to say that the expense of offices, a large item of expenditure, would be saved by running the wires into the different post offices on the route of the lines. 2. That the postmaster of the larger post offices could exercise a general supervision over the telegraph offices of his district, a competent assistant superintendent of telegraph being placed in charge of the wires radiating from each office, who should be held responsible for the prompt repair and working of the lines within his district;

the operators and clerks being responsible to and subject to suspension by him. Smaller stations, or way offices, which are required for locating the points between which breaks of the wires or interruptions to the line occur, might be filled by telegraphers who are competent to discharge the duty of postmaster; while wounded officers, soldiers, and sailors, who have been honorably discharged from the service, might be instructed as operators, and pensioned in this way by the government. The field would still be large enough for the employment of all first-class telegraphic operators as the staff of the Post Office Department.

4. "In regard to the annual cost of maintaining the lines when established, and what percentage to be allowed for depreciation of all kinds." The annual cost for maintaining the lines, salaries, repairs, &c., included, I estimate at $1,000,000. I also estimate the percentage for depreciation of all kinds at eight per cent. per annum. The annual receipts you have not asked; I, however, estimate them at $2,000,000. In forming this estimate, I have not had in view a reduction of the rates, which I believe would largely increase the receipts without adding materially to the force of operators required to meet the demands which cheap telegraphing would invite. For an estimate of the annual receipts of the different telegraph companies, and to substantiate my views, I respectfully refer you to the Commissioner of Internal Revenue. These receipts you will find enormous in the aggregate; therefore, the department would be fully justifiable in recommending that the revenue derived from this source should be applied towards sustaining the department over which you preside. The following is an estimate of the capacity and revenue to be derived from each wire of the telegraph, the government charging only two-sevenths of the present rates charged by private companies between Washington and New York. A good operator is capable of transmitting over a single wire twelve words per minute, or seven hundred and twenty words per hour. For twenty-four hours this would give 17,280 words, or eight hundred and sixty-four messages of twenty words each, including the address and signature. Therefore, eight hundred and sixty-four messages, at twenty cents each, would amount to $172 80—a low estimate of the capacity of each wire. Six wires, at $172 80 each, would amount to $1,036 80 per day. Estimating three hundred working days per annum at $1,036 80 per day, amounts to $311,000 per annum for a line of six wires, two hundred and forty miles in length. This estimate is based only on the transmission of 5,184 messages as the aggregate of daily business, divided between the cities of Washington, Baltimore, Philadelphia, and New York. At ten cents per message we would obtain $155,500, which is more than double the expense required for maintaining the line.

5. You ask "what legislative securities are necessary for protection." I answer, all the States have enacted laws protecting the property of telegraph companies against the acts of malicious persons, but the fact of the lines being declared government *post roads* or highways would give all the protection desired. During our conversation on the subject of establishing a system of telegraph for the government, the question was raised by you, where could the authority be found justifying an appropriation by Congress for the purpose; and upon an examination of my books, I observe that Mr. Chappell, from the Committee of Ways and Means of the House of Representatives, made a report on the 3d day of March, 1845, in compliance with a resolution of Congress instructing said committee to inquire into the expediency of reporting a bill to extend the government line of telegraph from Washington to New York. I therefore most respectfully refer you to that elaborate and far-seeing report on the subject.

I have the honor to be, very respectfully, your obedient servant,

HENRY J. ROGERS,
Telegraphic Engineer.

Hon. W. DENNISON, *Postmaster General.*

ALBANY, *April* 24, 1866.

SIR: I have the honor to acknowledge the receipt of your favor of the 16th instant, referring me to the speech of Hon. B. Gratz Brown, made in the Senate of the United States on the 23d of February last, in explanation of the proposition for the government to establish telegraph lines to be used in connexion with the Post Office Department, and requesting me to inform you what explanation, if any, I may wish to make on the references of Mr. Brown to my work, "The History, Theory, and Practice of the Electric Telegraph," published in 1860, and also whether my estimates of the construction and maintaining of telegraph lines, as quoted by the senator, are, in my opinion, reliable as a basis for estimates for such construction and maintaining of telegraph lines at this time; and if not, what difference in the estimates should be now made.

You also do me the honor to add that you will be greatly obliged for any suggestion I may have the leisure to make to you on the general subject covered by the Senate resolution referred to.

In reply to the above inquiries, permit me to remark that the quotations from my work embodied in the speech of the Hon. Mr. Brown were doubtless made after a cursory examination of its contents, and convey a very erroneous idea of the subject treated upon by it.

The first statement which he makes, citing my authority, is that the telegraph companies "will let no one but the Associated Press, another giant monopoly, send any special despatch or news to any paper except from Washington or Albany."

This statement is entirely incorrect, and is nowhere made in my book. Mr. Brown doubtless derived his impression from a misapprehension of the last paragraph on page 386, which is the conclusion of an article entitled "The Associated Press of the United States," and is as follows: "*By the rules of the Associated Press,* no journal can receive an exclusive despatch from any other points than Washington and Albany." This paragraph was written in 1859, giving one of the rules which the members of the Associated Press then imposed upon each other for their mutual benefit, and had no connexion whatever with any telegraph company, or with any newspaper not belonging to the association. The rule became inoperative on the breaking out of the rebellion, and has not been in force since. It is scarcely necessary to say that the enforcement of such a rule by any telegraph company would be not only contrary to law, but manifestly against its interest. One leading object of all telegraph companies is to increase the business of their lines, and they have always courted the patronage of the press in every part of the country by reducing their charges to the minimum rates and making every effort to meet the requirements of these important and valuable customers.

Referring again to Mr. Brown's speech, in which he states that "it was estimated in 1861 that there were 50,000 miles of telegraph in the United States, and that there has, perhaps, been no very extensive addition made since then, except the line to the Pacific—say 2,000 miles," permit me to say that the number of miles of electric telegraph in operation in the United States in 1859 was upwards of 50,000, and that the increase in the past seven years has been very great. Two companies alone, the American and Western Union, have over one hundred and ten thousand miles of wire in operation, and other lines, belonging to rival and connecting companies, will swell the aggregate to more than three times the amount estimated by Mr. Brown.

The next quotation from my work gives a portion of a paragraph estimating the cost of constructing lines at $61 80 per mile, but omits the conclusion of the paragraph, which is as follows: "This is about the cost of construction of a majority of our lines; but if built as they should be, they would cost $150 per mile."

It is well known by every person who has any knowledge of telegraphy in

this country previous to the publication of my work in 1860, that comparatively few lines had been at that time even tolerably well constructed; and one object which I had in view in writing it was to call attention to this prevailing fault, and endeavor to get a better system inaugurated. Thus, on page 231 is the following: "But though we surpass all other nations in the value of our electric apparatus, we are far behind many, and, indeed, most countries, in the construction of our lines. This does not arise from want of knowledge or of means, but from the custom which obtains to a great extent among all classes and professions in this country, of providing something which will answer for a time instead of securing a permanent success.

> "'But to my mind—though I am native here,
> And to the manner born—it is a custom
> More honored in the breach than the observance;'

especially in building lines of electric telegraph, where the best are always the cheapest."

Since then there has been a very marked improvement in the construction of telegraph lines in this country. Small poles, of inferior wood, which required renewing every few years, have given place to large and more enduring ones of chestnut and cedar, and small iron wire, which offered great resistance to the passage of the electric current, has given place to zinc-coated wire of larger size and greater conductivity.

But while the quality of the lines has greatly improved under the experienced and liberal management of the telegraph companies, the cost of constructing lines has kept pace with the increased cost of everything else, and has more than doubled within the past six years, so that lines which could have been built in 1860 for $150 per mile could not now be constructed for twice that amount. A substantial telegraph line, constructed on the line of a railroad, with cedar or chestnut poles thirty feet in length, and six inches at the top by twelve at the but, set forty to the mile, with most improved form of insulator and best galvanized wire, would cost $400 per mile for a single wire. Additional wires would cost $200 per mile. If forty-foot poles were used (which would be necessary if many wires were to be placed upon one set of poles) it would cost six hundred dollars per mile for a single wire, and the same price per mile for additional wires as in the case of the thirty-foot poles. When fifty-foot poles are used the cost is very greatly enhanced.

Mr. Brown estimates the total cost of all the telegraph property in the United States at "a little more than $2,000,000." Now, if we estimate the present cost of the lines and their equipment at the moderate price of $300 per mile, and the number of miles of wire in the country at only 150,000, we have a total cost of $45,000,000, without reckoning the value of the patents, franchises, &c.

Mr. Brown states that "telegraphs properly constructed, the timber well prepared and wire protected, will last for twenty years." This may be true, but it remains to be proved. I don't believe it. The best lines that have been constructed thus far have not lasted over ten years without reconstruction, while large sums have always been annually expended upon them in repairs. Telegraphs are proverbially perishable property. There is nothing about them of a stable character. The poles rot in the ground, and very rapidly near the surface; the wire oxidizes through the action of the atmosphere, and soon melts away, or "rusts out," to use a more common expression; the insulators are broken or destroyed in a thousand ways. I think the wonder should be, not that they don't last longer, but that such fragile, perishable, and totally unprotected sentinels of the public, stationed over such vast and dreary wastes, isolated oftentimes from every other species of property, should last as long as they do.

Referring to the capacity of a line to transmit messages, Mr. Brown says truly, "that much depends on the instrument used—more, however, on the

skill of the operator"—and then adds: "Thus the work of Mr. Prescott states that the Bain instrument will transmit over five thousand words an hour, the House three thousand words, the combination system two thousand words, and the Morse about the same. The combination is the system now in general use." There are so many inaccuracies in the above that I will quote the paragraph from my book in full from page 231: "The rapidity of the several instruments in use may be given as follows: Cooke & Wheatstine's needle telegraph of Great Britain, nine hundred words per hour; Froment's dial telegraph of France, twelve hundred; Bréguet's dial telegraph, also French, one thousand; Siemen's dial telegraph, formerly used upon the Prussian lines, nine hundred; Bain's chemical, in use between Liverpool and Manchester, and formerly to a considerable extent in the United States, fifteen hundred; the Morse telegraph, in use all over the world, fifteen hundred; the House printing, used in the United States to a limited extent, and in Cuba, twenty-eight hundred; Hughes's and the combination, two thousand."

Mr. Brown is scarcely justified in citing me as authority for the statement that the Bain instrument will transmit over five thousand words an hour, when I have explicity given the maximum rate at fifteen hundred for that system. On page 134, referring to Mr. Bain's ingenious but thus far impracticable method of fast writing, I said: "But it would be doing Mr. Bain a manifest injustice not to mention his method for rapid writing, which, *in theory*, could transmit intelligence with the greatest accuracy at the astonishing rate of five thousand words per hour."

The difference between *theory* and *practice* is oftentimes very great, and this invention of Mr. Bain serves as a good illustration of it; for, although he devised his method for rapid writing more than twenty years ago, it has never been of the slightest practical utility up to the present time. Mr. Brown's theory of sending telegrams at postal rates is another illustration of this difference, which I think he will be willing to acknowledge after he has given the subject a more thorough examination.

I deem it proper to remark, in this connexion, that the speeds given above for the various instruments are the maximum performances of well-skilled operators upon lines in perfect order, and that the ordinary working of the best lines will scarcely average more than half the above rates of speed.

Mr. Brown's assertion that "the combination is the system now in general use" is exceedingly incorrect, there being less than one thousand miles of wire upon which this instrument is employed. It is well known that the Morse instrument is everywhere used almost exclusively. Of the five hundred thousand miles of telegraph in operation in all parts of the world, all the other instruments combined are employed upon less than twenty thousand miles of it.

Mr. Brown's data being thus shown to be incorrect, it naturally follows that his conclusions, based upon these data, are also unreliable. Permit me, however, to refer briefly to some of his estimates. He proposes to construct a line between Washington and New York, consisting of six wires, to be worked at a total expense per annum of $25,694 20. He says, "the capacity of such a line, working only half the time, or twelve hours, at an average speed of two thousand words, may be thus set forth: $6 \times 12 \times 2{,}000 \times 365 = 52{,}560{,}000$ per annum.

Now, dividing this number of words per annum by twenty, the average number of words in a despatch, we have 2,628,000 messages, which at the rate of four cents each for delivery, the established rate paid the messengers in New York and Washington, and we have $105,120 for the one item of delivering the messages after they have been transmitted.

Mr. Brown proposed to occupy every hour and minute of the twelve hours per day, and every day in the year, including the Sabbath, making no allowances for the interruptions of the lines by rain, fog, or sleet; by atmospheric

electricity, in the form of thunder-storms, nor terrestrial magnetism, or the aurora borealis; by breaks, crosses, ground connexion, or the thousand-and-one ills that our poor mortal telegraphs are heir to—in short, he proposes to run his 2.40 beast for an entire year, without a moment's respite for food, rest, or sleep, and always keep his speed up to the maximum standard.

As Mr Brown allows but nine thousand dollars each per annum for the working expenses of Washington and New York offices, let me point out how many men he will have to divide this among. As no provision is made for any cessation of labor for meals, it will, of course, be necessary to have a double force for each wire, which gives us twelve operators: 2,628,000 messages per annum, would give us 7,200 per day for every day in the year; and allowing each clerk to receive over the counter, read, check, and take pay on two hundred per day, would require thirty-six receiving clerks. The same number of recording clerks would be none too few, even of the most active kind. Half this number of numbering clerks might answer, if active and faithful. Three men to take charge of the batteries would be required. As none but printing instruments can work at anything like his speed, under the most flattering auspices, we shall need printing instruments, and these all require men, termed grinders, to produce the motive power. Of these we should need twelve. If we allow forty messages to be delivered by each messenger—and that is as many as they can average per day and deliver them with any degree of promptness—we shall need one hundred and eighty messengers. This gives us a total of two hundred and ninety-seven employés for each office to divide Mr. Brown's nine thousand dollars among, giving to each one the highly lucrative salary of $30 30 per annum, or a fraction over eight cents per day. This, however, does not include the pay of the superintendent, manager, rent of office, fuel, light, nor any of the incidental expenses of the office.

But permit me to present this matter in another form, and from actual data. The American Telegraph Company is one of the oldest and most extensive telegraph companies in this country, and it may very naturally be supposed that it works its lines as cheaply as is consistent with a wise economy. It owns a score of lines over Mr. Brown's favorite route between New York and Washington. During the past year it had in operation east of Washington 20,000 miles of wire, and the working expenses upon this section, exclusive of the construction of new lines, exceeded $1,300,000, or $65 per mile per annum. Now, estimating the number of miles of wire in the United States at 150,000, and we have a total of $9,750,000 as the ordinary working expenses of the lines, without counting the interest on the investment or cost of reconstruction. Taking Mr. Brown's tariff for sending messages—three cents apiece—we should have to send three hundred and twenty-five million (325,000,000) messages to raise this amount of money. But as our wires are totally inadequate to perform this immense amount of work, let us ascertain how many miles of line the government must build to accomplish it. As we have no data by which we can arrive at the exact or even approximate number of messages transmittted per annum, in the United States, we must look abroad for these data. In France the telegraph is owned by, and under the exclusive control of, the government. In 1864 she possessed a system comprising 71,034 miles of wire, and 1,301 stations, which transmitted 1,500,000 private and 175,000 official despatches. This gives a little less than 24 messages per annum for each mile of wire. Now, by dividing Mr. Brown's 325,000,000 despatches by 24, the number averaged on the government lines in France per mile, and the government would require thirteen million five hundred and forty-one thousand six hundred and sixty-six (13,541,666) miles of wire!

It seems unnecessary, however, to multiply proofs of Mr. Brown's errors in data and conclusions, and I will dismiss this brief review of his speech by adding in regard to his suggestion, "that the telegraphic charges on ordinary

commercial correspondence, may be made as inexpensive as the present postal rates;" that the messengers receive more than the price of a letter stamp for delivering each despatch, and that the government tax upon the gross receipts of the telegraph companies averages more per message than Mr. Brown's estimate of the entire expense.

Very great misapprehension exists in regard to the profits derived from telegraphing. There is a general but erroneous impression that they are very large, and hence stock companies are periodically got up by speculative enthusiasts, who dispose of their stock to a credulous public by means of flattering and plausible statements of the great profits to ensue, while the result proves that not one company in a dozen ever earns a dividend. Some of the older companies have, by careful and judicious management, earned fair dividends; but they have in few instances averaged over six per cent. for a series of years.

Telegraphing in the United States and the British-American provinces is, and has been for many years, done better and at a cheaper rate than in any other part of the world. During the first half of my twenty years' service as a telegraph operator, I was strongly of the opinion that it would have been good policy for the government to own and control the telegraph lines, and that the public would have been greatly benefited thereby. The companies were then small and poor; the lines were badly constructed and worse supported; and all progress was prevented by the constant and unremitting competition of rival lines. There was no question but that one company could do the telegraphic business over any given territory much cheaper and better than two or more. There is a striking analogy in this respect between the telegraph and the mail service, and no one will deny that one company can manage this service better than two or more.

For this reason, and because the government, with its unlimited resources, could expend all the money that was necessary to build any requisite number of reliable lines, I was in favor of its assuming the control of the telegraph. Now, however, the case is entirely different. We have a telegraph system unrivalled by any other nation upon the globe, either for its extent, economical administration, or accurate and prompt manner of performing its work. The telegraphic system of the United States is more than twice as extensive as that of France, two and a half times that of Great Britain, four times greater than that of Russia, and equals in extent the aggregated system of Austria, Prussia, and the lesser German States, Italy, Spain, Belgium, Switzerland, Greece, Turkey, Persia, India, Australia, and the British-American provinces. All this having been accomplished by the energy and activity of private enterprise, it does not seem to me necessary or judicious for government to interpose in the matter. None of the States have ever given exclusive charters to any telegraph company, and there is nothing, therefore, to prevent competition. Indeed, there has never been a time within the past eighteen years when there were not more or less rival lines along all our principal routes. At the present time there are four rival companies operating lines between Washington and Boston, and several additional companies are organized to extend their wires all over the country.

But if our government should elect to follow the example of France and other monarchical countries, and assume the control of the telegraph instead of leaving it open to private enterprise, as it has heretofore been conducted, then I should recommend that it purchase the existing lines at a fair valuation, and construct such additional ones as the exigency of the service may require.

Leaving telegraphy open to a fair competition, giving it an open field and a free fight, and the prices will conform to the general laws of trade; the price of transmitting a telegraphic despatch bearing the same proportion to its cost as the price of a bushel of corn does to the cost of raising it and bringing it to market. But if the government should step in and build lines to work at a loss,

of course it would destroy the value of the property in the existing companies, and they would have just claims for redress.

In conclusion, my opinion is that any interference on the part of the government in the business of telegraphing will prove unwise, injudicious, and unnecessary.

I am, very respectfully, your obedient servant,

GEO. B. PRESCOTT.

Hon. W. DENNISON,
Postmaster General, Washington, D. C.

NEW YORK, *May* —, 1866.

DEAR SIR: Upon the reception of your letter of the 16th ultimo, receipt of which has been heretofore acknowledged, I immediately furnished a copy thereof to the executive officers of the Western Union, American, and United States Telegraph Companies, and requested them to furnish me with the statistical information and their views upon the several queries suggested by you. I have the honor herewith to transmit their reply.

Very respectfully, your obedient servant,

THEODORE ADAMS,
Agent Western Union, American, and U. S. Telegraph Cos.

Hon. WM. DENNISON,
Postmaster General, Washington, D. C.

Reply of the American, Western Union, and United States Telegraph Companies to the interrogatories of the Postmaster General in his letter of April 11, 1866, addressed to Theodore Adams, esq., as agent of these companies.

The project of building lines of telegraph along the postal roads of the United States, under the auspices of the United States government, having been brought to the notice of the Postmaster General by a resolution of the United States Senate, February 23, 1866, he has presented a series of inquiries, in a communication addressed to Theodore Adams, esq., to which this paper is intended as a reply.

These inquiries are accompanied by the remarks of the Hon. B. Gratz Brown, introductory to a series of propositions presented by him, in which certain advantages are recited as the possible result of the prosecution of such an enterprise. To these also is the attention of the companies directed.

The importance of these inquiries and statements render it necessary that great care be exercised in preparing replies that shall not only be truthful, but shall present the case so clearly and intelligently as to enable the Postmaster General to present it satisfactorily to the Senate. Too little time, however, has been afforded to do more than sketch the leading facts, compelling the omission of much detail which might illustrate and give emphasis to the general statement herein presented.

Before proceeding to answer the interrogatories of the Postmaster General, and as introductory to the whole topic, it will be proper to notice the first of the series of considerations urged by Mr. Brown in favor of establishing lines of telegraph under government control.

Mr. Brown says:

"They could be predicated on the post office principle, and have a uniform rate throughout the country, and a single price for all distances; the short

equalizing the long, and the surplus of highly profitable lines enabling an extension on poorer routes, until all parts of the country could be brought into the telegraphic circuit."

1. To predicate the establishment of telegraph lines on the principle of the Post Office, with uniform rates, and a single price for all distances, is a popular error, which an examination of their distinctive character and capabilities soon renders apparent. In two features of detail alone do they bear distinct resemblance. The letter left at the post office and delivered to its address, corresponds with the message left at a telegraph office and its delivery. In all other respects there is so fundamental a difference that an examination is essential to fix the value of all details.

A letter deposited in a post office is placed in a bag, and is carried to its destination with no less labor, and at no less expense, than if *ten* letters, instead of one, were so deposited. The time taken in transport is the same. A leather bag covers a thousand letters as easily as a solitary note. It was this fact which led to the reduction of postage. But it was accomplished without the loss of an hour to government, without the enlargement of a coach, or increase of consideration. It involved no new brain-labor, no new responsibilities, no new expense. Under such circumstances high postage was a folly, and to return to it would be almost a crime.

A communication by telegraph, on the contrary, has this marked peculiarity: it demands a calm, unoccupied brain, and a steady hand to manipulate its contents, letter by letter, in a language of monotones. A slip of the finger from the manipulating key changes its meaning; a truant thought alters the manuscript; a shadow of forgetfulness mars its whole design. It demands a whole wire for its use, and a given time for its solitary passage. Thus to communicate a fact to two persons with equal promptitude over a single wire, even though both communications were left at the same instant, is simply impossible. Each must wait its turn. Hence the multiplication of wires, and the dangerous haste of transmission, themselves multiplying causes of interruption and the increase of error.

Added to all this is the necessity for repeating this process when destined to any point not directly reached by the originating office.

Over and over again have most of the messages left in the hands of telegraph companies to be translated or re-written before they reach their destination; very different from the sealed letter which needs but the toss of a practiced hand to change its route and put it under the cover of a new bag.

With every divergence from a single main route; every extension beyond a certain limit on every main route; every increase of that class of business created by the telegraph requiring instant despatch; every added wire; every auxiliary office opened to meet commercial wants, expenses, and care and responsibility multiply in a ratio unknown to other enterprises.

With the facilities afforded by one hundred thousand miles of wire, all reasonably occupied with the present current business, or even during the greatest pressure produced by the necessities of the war; with all the help of an enlarged tariff, since the adoption of which the number of messages has increased rather than diminished, the average profit has been small. Had the companies laid aside, as might have been wise for them to have done, a sum of money equivalent to the reasonable percentage of decay, based on the presumed necessity of building anew every ten years, no profits could have been shown at all. And, as it is, though doing a large business, the Western Union Telegraph Company, with its forty-four thousand miles of wire, free from opposition on a large portion of its territory, have been unable to declare any dividend of profits since August of the past year.

The United States Telegraph Company, with 16,000 miles of wire, worked to their full capacity during the last year, have been utterly unable to meet cur-

rent expenses, have lost largely every month, and was, after the most vigorous efforts to work their way to success, glad to consolidate with the Western Union Telegraph Company for mutual safety from expenses and an opposition which was threatening to consume both.

If ever anything was clearly demonstrated, it is the fact that two vigorous organizations, covering the country over like routes and competing at the same points as completely as the two companies last named, legitimately and honorably contesting for business, with no underbidding or change of rates, cannot be maintained with profit to either. The act of consolidation which united them, and which has been availed of to fasten on the consolidated company the opprobrium of "monoply," has been the result, not of power, but of the pressure of mutual necessity. Even now, opposition removed, the wires busy, the tariff undiminished, it will require the strictest economy to preserve to the property such a power of return to holders of its stock as is necessary to give it a fair value as an investment.

The long list of companies which have failed, though backed by capital, and built through the most populous districts, are all proofs of the same general statement. Could their history be written, it would only add positive evidence to what seems already proved.

If, therefore, with a present tariff so much larger than that proposed by Senator Brown to be adopted, the companies are thus embarrassed, how would it be with one diminished? More business might be offered. Possibly, with a reduction of fifty per cent. from present rates, the number of despatches might be doubled, thus merely giving us our present revenues. But how shall these additional messages be sent? If with the transmission of eight millions of despatches the wires are now kept reasonably busy, how shall we send eight millions more?

If all the wild computations which have been made, based on the use of the day's whole circle of twenty-four hours, and the ability to send words at computed maximums per minute, were to guide the solution of such a problem, the process of arithmetic would show how easy would be the answer. These are the computations which fascinate the builders of new lines, or are used for the fascination of capital with which to build them. They make every minute by day and night, through all seasons, in every holiday, with no days of rest or fast, or thanksgiving, to stop the process, bear its golden dollar. But no such use of time is given to us. The commercial day, in its connexion with the telegraph, is, practically, one of five or six hours. In half that space of time is the maximum of its work pressed upon us. So that, to meet an enlargement of it, equivalent to the proposed reduction of tariff, there is but one solution: new capital must be invested in the provision of new additional means of transmission, or the company's revenues be exhausted for that purpose, without a dollar's benefit, or any compensation beyond increased responsibilities, duplicated labor, and the enlargement of current expenses for all the paraphernalia of telegraph service.

To make even the minimum of existing tariffs the basis of a general tariff, would, to render it successful, demand four times the present amount of business to be done, and the erection of, at least, 200,000 miles of additional wire. A more stable and expensive mode of structure would have to be adopted. And, even after all that was done, it might be found that the limit to which society was willing to intrust its secrets and business to the gaze of an army of officials had been more than reached, and that its chief effect had been to unnecessarily cheapen commercial communication between distant places, without adding to the facilities of social intercourse to which the minimum of the existing tariff so largely applies.

Under such a state of facts, much success in building over poor routes from the revenues of "highly profitable ones," as suggested by Mr. Brown, cannot be predicated. It has already been done to a vast extent by the companies and

the private enterprise of the populations interested, and unless government proposes to give to the people what they are willing and able to provide for themselves, and which can only be vigorously cared for when so provided, it will leave all such work to be accomplished by that spirit of self-support which gives sinew to the national character, and vigor and manhood to the citizen.

Having thus taken advantage of the opening proposition of Senator Brown as an introduction to the more specific subjects embraced in the interrogatories of the Postmaster General, the following answers are given thereto, with such reference to the other propositions made by Mr. Brown as the nature of the interrogatories seem to warrant.

INTERROGATORIES BY THE POSTMASTER GENERAL.

1. Cost of construction, including engineering, patents and franchises, per mile: one wire—six wires.

The cost of building lines varies according to locality, timber, method, nature of the ground, and the wires to be borne.

A line from New York to Washington should be of the best class, and would be represented by the following figures:

43 poles delivered at stations	$161 25
129 arms, complete	129 00
43 holes, five feet deep, tools, &c	30 00
Labor—handling, preparing, erecting, &c	25 00
Six wires, at 12 cents per pound	240 00
Labor—wiring, transportation, &c	30 00
Distributing poles	25 00
Superintendence, &c	25 00
	665 25
240 miles at $665 25, Washington to New York	$159,660
Lines through New York, Philadelphia, Baltimore and Washington	16,000
22 cables at rivers south of the Hudson	20,000
Cable at Hudson river, house, boats, &c	8,000
	203,660

The cost of franchises and patents cannot be given.

Such a line built by government, carefully, and with reference to permanence, with six wires, would cost $250,000.

If, however, it be seriously contemplated by the government to construct lines along the great commercial routes, and if it be the design in so doing to remove from the system, by every attainable appliance or improvement, all its ascertained defects, a structure of larger poles, and wires of superior conducting qualities, will be built. Such a line should be constructed of the most solid and durable wood, such as the black locust, so that masses of sleet or moist snow, so destructive to present lines, would leave it uninjured. Heavier wires also, which, by their increased conducting capacity, would give greater facility and certainty to transmission, should be used.

These improvements, with greater care taken in the execution of the work than in that of ordinary structures, will, of course, increase its cost in proportion to the care bestowed. And should the government determine to provide facilities equal to those now proffered by private companies, it would be necessary to erect at least five lines of poles bearing six wires each, that being the number (thirty in all) now in use between New York and Washington by all the companies.

A common wire line, intended to bear one, and not more than two wires, can be built for one hundred and fifty to one hundred and eighty dollars per mile, the wire being number nine, galvanized, the poles of limited size, and costing not over one dollar and twenty-five cents each.

If for a line on which, say, five additional wires may be placed, the cost will be $320 per mile, exclusive of fixtures for additional wires.

This, of course, cannot be taken as the basis of the cost of a line on untimbered territory, as on the western plains where poles cannot be procured, and which have to be transported long distances at great cost.

No franchises based on distance have ever been purchased. Right of way has usually been secured by doing free all road (railroad or pike) business—in some cases furnishing railroad companies with a wire for their exclusive use free of charge, and a portion, usually one-half, of the receipts for telegrams taken at railroad stations by railroad employés.

The right to use patents has been paid for by issues of stock, varying from 25 to 50 per cent. of the capital of several of the various independent companies at the period of their organization, since then consolidated into those now existing.

2. Cost of apparatus—average per mile.

The average cost of machinery, batteries, &c., for a first-class line of six wires, with switches and all the usual conveniences, taking a six-wire line from New York to Washington, and estimating an office for every five miles as an average, would be $70 per mile.

For a single wire over the same route the cost will exceed $30 per mile.

3. Cost of maintaining—average per mile.

The cost of maintenance, by which is meant the ordinary repair of a six-wire line, as described, with a patrol force such as is now employed between New York and Washington, would be 10 per cent. per annum on the original cost of construction, or about $20,000 per annum.

The actual cost of the repair and patrol of the American Company over the same route for 1865 was $56,100 51.

The cost of reconstruction would be 10 per cent. per annum on the original cost.

These percentages will be greater or less according to the manner of construction, the route, and the climate.

Along railroads, in mild latitudes, repairs would exhibit their minimum cost; along pike roads, in northern latitudes, their maximum.

The maintenance of cables at the North river for six wires would approximate fifty per cent. per annum of their cost for current repair and attendance, and fifty per cent. more for their renewal.

Both of these are liable to increase according to circumstances.

On single-wire lines, costing $180 per mile, the cost of repairs, with one repairer each fifty miles, would be 13 per cent. per annum, and 10 per cent. for renewal.

It is true that the durability of wood of a kind quite attainable exceeds ten years; yet no one experienced in telegraph pursuits or management, on a review of every casualty to which lines, with their fixtures and insulators, are liable can safely increase the average of years given.

Cables cannot be estimated as having a durability beyond two years, and are liable to be destroyed at any time. At important crossings, such as the Hudson river, a considerable number of men, with boats and buildings, have to be provided, so as to be ready for instant service, causing a current annual expense equal to the current cost of the cables.

The American Telegraph Company have in use 71 cables between New York and Washington. The 14 now in use at the Hudson river by that company cannot be now provided at a less cost than about $40,000.

4. Extent of system to answer the object of the government to successfully meet all competition, and to reduce rates to the minimum suggested by Senator Brown. Also, say reduce 25 or 50 per cent. on present tariff of Western Union and American lines. Have this mapped.

To meet all competition implies the necessity of building wherever lines now exist. These lines are shown in an accompanying map.

The telegraph companies have increased their tariff, in order to enable them to sustain a system of lines reaching the extremes of commerce.

To render the adoption of a minimum tariff distinctly possible and successful, lines should be confined to paying routes and reaching populous points alone. Between two large cities increase of labor may be more easily accommodated to an increased business, rendering a diminution of tariff possible, if the existing tariff is above the average charges for other labor. But when, to accommodate the populations of small towns, a wire is erected which is used partly for the interchange of business between each other and partly to the larger city office, each point, where twelve offices are thus connected, having, of necessity, the use of the wire for only five minutes each per hour, immediately waste of labor commences, and an operator, with a first-class salary, can only give a small percentage of his time in actual labor, although his attendance must be constant.

Were the companies, therefore, to adopt a minimum tariff, they would confine their business to populous cities; or, on the presumption that decrease of tariffs one-half would double their business, they would be driven to the provision of double facilities and the consequent expenditure of large sums of money, with no increase of remuneration beyond that derived from present investments.

There can be no doubt that the plan proposed by Mr. Brown of running a line of telegraph over "one established route, controlled by the government, and thrown open to the public at minimum rates, would go far to insure reduction in telegraph extortion everywhere." It would do far more than that. Choosing the most favored route for business, and having no needy stockholders to provide for, no poor routes to sustain, with the purse of the public treasury from which to draw the means of building strong and costly lines, with no necessity to sell its stock in the market, government can, by a low tariff, just high enough to meet expenses, destroy the profits of any telegraph line erected by private means.

Telegraph companies never proposed to the public to be eleemosynary institutions. They were built to make money. They have expended vast sums with that end in view; and in so doing they have not dreamed that a government, established by the people for the purpose of protecting their common interests, could ever become their competitor.

As to the charge of extortion made by Mr. Brown in the extract above given, and before entering upon the illustration of the effect of a reduction of tariff as desired, a few words seem necessary. How far may private enterprise go in benefiting itself before it reaches that point where the charge of extortion can be properly made? Does the fact of enrichment prove that extortion has been practiced? Can government dictate the policy by which a private business is to be conducted on which it confers no exclusive rights, and which asks none?

The charge of extortion made against a private company by a senator of the United States, bears with it to the public mind special significance and gravity. The term "extortion," in its mildest signification, implies that advantage is taken of a position of power to draw revenues by force or compulsion. Mr. Brwon

confirms this meaning by asserting that "no party, except government, can enter into competition with the American and Western Union Telegraph Companies," and that, on account of the absence of opposition, money has been extorted from the people.

Now what are the facts? Is the American Company without opposition? Does that company possess any grants from government, any privilege, any protection which other parties cannot acquire? The Bankers' and Brokers' line, the lines of the Insulated Lines Telegraph Company, and the Franklin Telegraph Company, all contest with the American Company for business. Other companies are preparing to enter the field. All of them have equal facilities. No protection is given to one which is withheld from any other.

Now, it is proof of the justness of the charges made by that company, that they are adopted by all its competitors, even when, upon the theory of Mr. Brown, they have the means of enlarging very greatly their business by reducing their tariff.

On what plea, therefore, can the charge of extortion by the American Company be based, when lines built for the very purpose of contesting with it for business, and destroying its position as a monopoly, acknowledge the justness of its tariff, and, by their very existence in active competition with it, prove that the charge of being a monopoly is without foundation?

For the last few years, also, the United States Telegraph Company, (formerly the Independent,) built on the same route with the American Company, have, with all the vigor which money and the best operating talent could afford, and with wires equal to the transaction of a large business, pushed the most thorough opposition.

With a low tariff, the minimum of any rates yet attempted by the companies, and the same as the American, with the most fervent appeals to the public for patronage, it found that there was a limit to the use of telegraph lines, and was only too glad to adopt, with other companies, the present rates.

Now, for all this there must be reason. The work of extortion, always unwise, ever defeats itself. Sagacious men never practice it, for unwise measures have their retributions. Where, then, shall we seek for a solution of the meaning of four companies seeking public support on a system of extortion? Happily, the answer is not difficult.

Take, for example, the former minimum tariff of 25 cents for a ten-word message. For all distances under a hundred miles that was the tariff. Salaries were then forty per cent., and, in some positions, sixty per cent. less than now. Stationery has doubled. Wire, once 7 cents per pound, has increased from 10 to 15. The express that carried a trunk for 25 cents, now charges 40. The newspapers have doubled their price. The magazine is no longer attainable for 25 cents. So of everything else. The telegraph rate has only followed the general necessity—nothing more, nothing less.

Now, the policy suggested by Mr. Brown of extending the use of the telegraph by reducing its rate, may be as reasonably applied, and with much greater ease, to many other enterprises. Harper's Monthly and Blackwood's Magazine might double their circulation by a reduced charge. But there is a limit to even the sale of cheap literature, and publishers will not risk the sale of a double edition on a diminished profit. Hotels might double their guests at old rates; but they are full at the new, and there are no men denied shelter because of the change. As sales or guests increase, expenses increase also.

So telegraph companies adopt tariffs in correspondence with the times, and there is a limit to the use of the telegraph which necessarily grades the charges on the business offered, and suggests to what extent capital shall be used in providing wires for its transaction. So when they increase their tariff 25 to 30 per cent. and double the number of their wires, they claim that they have only followed the necessities which have induced like changes in all other pursuits on

the one hand, and enlarged to the fullest extent of which they were capable the means of transmission on the other.

To the Western Union Telegraph Company, which is named as uniting with the American Company in a common "monopoly" and system of "extortion," the same general facts are applicable. To oppose this monopoly, the United States Telegraph Company was organized. The west was covered by its wire; it planted its poles along all the public highways and on many of the leading railroads. Finding its tariff too low for sustenance, it also followed the general necessity for increase; and at last, with its wires all occupied, under the most vigorous administration, its expenses reduced within the closest limits, found that it was conducting its business at an average net loss of nearly $10,000 per month.

Why did this young organization not profit by the extortion of the other? Why did it not reduce its tariff? Why did it not open wider its doors to the public and "organize" success on the assurance of an enlarged business? Simply because it saw that there was a limit which the instinct of self-preservation forbade its passing, and because it saw that to grade its tariff lower was to secure a speedier decease.

The Western Union Company meanwhile was made to feel also that the opposition was so reducing their income that their accustomed dividends could not be maintained. And thus it happened again, that, to save the common property by the economy of a united management, seen to be necessary for both, the two companies were consolidated.

And now, standing alone, with every motive to court public favor, it is unable to see any reason for a change in its policy.

CAUSES OF CONSOLIDATION.

It seems important that advantage be taken of the opportunity thus furnished to make such a representation of the circumstances which have resulted in the present extensive jurisdiction of the companies here represented as shall enable all who may be called to judge in these matters to form their opinions correctly.

The facts will be stated as briefly as possible.

When the first telegraph companies were formed, they were organized with reference to communication between points not remote, usually confined, at most, to the limits of a single State. Many of them were merely local, to unite one town or city with another. Thus it gradually occurred that the whole country became covered with independent lines of limited length, most of them poorly built, and few remunerative.

Under such circumstances the public soon found that the brilliant thought of instant communication between distant points was, somehow, not realized by the facts. A Boston house doing business with Chicago was obliged to be content with responses received on the second or third day. On Boston despatches for Chicago four tariffs had to be paid, and a message had to be copied off and handed over to other companies for transmission at New York, Buffalo, and Detroit before it reached its destination.

All this process required time, and yet the loss of time was the least of the evils connected with such a state of things. The message, as it left the writer's hands in Boston, was not unfrequently a very different document when it reached the western parties. Four manipulations by different operators, four copies by four different clerks, four tariffs to four different companies, and a trifling error by each, with no responsibility between either, and no concert of management, the system was fast becoming a disappointment and a nuisance.

And as business men, smarting under the losses and annoyances of errors by which sales were made instead of stopped, purchases made on false quotations, things ordered which they never wanted, began to appeal to the courts for re-

dress, and the magnitude of the responsibilities they were daily assuming became more and more apparent, it was the instinct of danger to seek for some mode by which protection might be secured.

At first, by reason of sympathy with an invention which seemed struggling with incipient difficulties and inexperience, and a growing feeling of acknowledged incompetency to realize all that was at first anticipated from its connexion with commercial wants, both the injured parties and the courts were lenient and placable. The printing of an imposing heading on the company's blanks, denying all responsibility and demanding the repetition of messages as the only safety against error, had also its protecting qualities.

Yet with the accumulating experience of experts, and the invention of machinery by which direct writing to distant points became possible and easy, there came also a distinct revelation of the necessity of uniting the fragmentary jurisdiction into one living, vigorous organization, by which not only repetition and error might be avoided, but the messages be followed to their destination under a single direction and an undivided responsibility.

It was at this period, when segregated lines were feeling their weakness, decay already creeping into all their parts, and their revenues unequal to even a current vigorous support, that a few clear-sighted men in the west conceived the project of buying up the groups of feeble organizations, and making them direct leaders between the large western cities. The stock was comparatively valueless and easily and cheaply bought. The needs of commercial intercourse were pressing. The project had in it the true elements of success, and it was accomplished.

For seven years thereafter the purchasers went on improving the lines thus acquired and rendering their connexions more certain. During all these years no dividends were paid. Time and money and all the earnings of the line were devoted to that series of combinations which, from a mass of weak and perishing organizations, culminated in the Western Union Telegraph Company.

Wealth, well-earned, followed the pioneers in this perfectly legitimate enterprise, proving, by an argument men can appreciate, how correct was the idea upon which their plans were based.

The wealth of a few men, however, is but an incident of the argument. It was the combination of lines which saved the system from disgrace, and made it available to commerce and to public wants. No oppressive tariff followed any of these movements; no changes in former charges were made at all, and none would probably ever have been made had not war come to change values and render it necessary.

As events developed, the Western Union Telegraph Company became interested in extending its lines to the Pacific, a project long deemed impracticable. That also was accomplished. But no sooner was it brought to successful completion, and the Atlantic and the Pacific heard the dash of each other's waters, before the two companies which severally owned the lines between New York and Buffalo, and between Philadelphia and Pittsburg, found that they stood between this great western enterprise and the national metropolis on the seaboard.

They saw at once that the wire which reached Buffalo or Pittsburg from San Francisco had its proper terminus only in New York. And although pledges were made, strong as the capacities of language could put into legal form, that their territory would be respected, yet, with the clear necessity before them of reaching western cities by a single flash from those on the seaboard and from the national capital, the arrangements were soon made by which all these interests were placed under a common direction.

And now, thus homogeneous and vigorous, it becomes possible, as under no other circumstances could it have been, for this company to enter into terms with the governments of Europe and Asia to unite the two continents by lines covering three-fourths of the area of the globe.

The American Company has followed a similar course, stimulated thereto by similar necessities.

REDUCTION OF THE TARIFF.

To "map out" the effect of a reduction of 25 and 50 per cent. from the present tariff, after what has been said, can only show how quickly such a process would lead to ruin. Here is one exhibit:

United States Telegraph Company under the tariff of 1865, *(same as now.)*

Receipts, 1865		$666,422 26
Expenses		768,422 26
Loss		100,000 00
Tariff reduced 25 per cent.:		
Receipts	$501,316 70	
Possible increase of 25 per cent	125,329 17	
		$626,645 87
Expenses, not increased		768,422 26
Loss		141,776 39
Tariff reduced 50 per cent.:		
Receipts	$334,211 13	
Possible increase of 50 per cent	167,105 56	
		$501,316 69
Expenses	768,422 26	
Help needed to meet the increased business	75,000 00	
		843,422 26
Loss		342,105 57

To do this increased business would require additional wires. Had the United States Telegraph Company provided these, even to the extent of a single wire from New York to St. Louis, *via* Pittsburg and Cincinnati, and one to Chicago, *via* Buffalo and Cleveland, the year would have shown the following result:

Expended for wires	$200,000 00
Loss on business	342,105 57
Total outlay	542,105 57

American Telegraph Company, under existing tariff.

Receipts, 1865	$1,437,627 21
Expenses, averaged	1,186,654 08
Profit	250,973 13
Tariff reduced 25 per cent.:	
Receipts	$1,053,220 41
Increase, 25 per cent	263,305 10
	1,316,525 51
Expenses, not increased	1,186,654 08
Profit	129,871 43

Tariff reduced 50 per cent.:		
Receipts	$718,813 60	
Increase, 50 per cent	359,406 80	
		$1,078,220 40
Expenses	1,186,654 08	
Extra help, at least	100,000 00	
		1,286,654 08
Loss		208,433 68
Outlay for wires, at least		$150,000 00

These statements allow the most favorable possibilities of the effect of a reduction operating upon the whole line. How far they encourage companies to make the attempt it is unnecessary to state.

The claim made by Mr. Brown that an enlarged business would "insure method, facilities, and courtesies" not now given, might be true were the enlargement a source of profit, a result which usually tends to blandness of manner and general suavity. But with a lessening exchequer and diminishing profits, it is feared that methods would shape themselves to the growing obscuration, and that manners would become more positive than polite.

5. How far can postmasters be profitably employed as operators?

Postmasters, except in small towns, would not be available agents of a telegraph system as operators, even with a knowledge of the business, and possessing all the requisites of character and fitness. They are required to be ready for instant service, especially when, as in all small offices, they are reached by a wire which supplies a number of other stations, and with which the duties and courtesies of a post office must interfere.

I ngeneral few are fit for telegraph duty except comparatively young persons, and such as can devote their time and mind to it as a pursuit. It might benefit the postal service to make expert operators postmasters, but not to make postmasters, as such, operators.

The rapid growth of the business of telegraphing, and the multiplication of offices, have prevented such a scrutiny of the character of employés as the delicate and confidential character of the business demands. Individuals and families have occasion daily to expose at telegraph offices facts which, could they avoid it, no eye would ever see, except the party addressed. Men of business, when in peril, or when in possession of the knowledge which gives success in traffic, reveal all, unwillingly, at the telegraph office. All these, with infinite variety and scope, call for the utmost delicacy, and are safe only in the hands of men of the truest character and the nicest honor. Not only so, but they must be men so separated from all partisanship, and so free from all angularity, that to render postmasters available for operators, the whole policy under which they are usually appointed would require to be changed. In the hands of government officials of course no political correspondence would be attempted, except by those in sympathy with the existing administration. All that feature of present business would seek the privacy of the mails.

One of the most effective means to secure freedom from error is the retention of qualified operators, who become so accustomed to the address of parties, the general subject of their communications, and an indescribable aptitude for the special work of a single locality or the towns on a single wire, as to enable them to transact all their duties from month to month without mistake. This retention of employés could scarcely enter into a system controlled by government; and yet it is a practice the value of which is becoming more and more acknowledged.

6. How far can post offices throughout the country be made available stations for telegraphing?

The general location of post offices renders them available for telegraph service; but experience has shown that the business must be conducted separately to be generally acceptable. Many very small offices might be so used. The government would not enjoy facilities superior to those now possessed by the telegraph companies if its post offices were so used, as telegraph companies are permitted to establish offices in all the railroad stations in the country without charge for rent.

7. How many offices (stations) would have to be used in New York, Philadelphia, Baltimore, Boston, Chicago, Cincinnati, St. Louis, &c.; in a word, the proportionate number of offices that would be required in the large cities?

The number of offices required in large cities is regulated by their commercial centres. In New York there are bank, produce, dry goods, forwarding, cattle, and travelling centres, all of which demand the facilities given to auxiliary offices. To the first of these have to be added the stock exchanges, where, within so brief a time, so much business is done with distant places. The last of these is not a centre, but a series of centres—hotels where, throughout the year, every interest known to the nation is represented.

There are also social centres, needed not only for receiving, but for the rapid delivery of business coming to the central office from abroad.

There are also warehousing, express, and steamship interests, each of which, as business increases, demands the telegraph to come within their easy reach.

It would be safe to say that, in each of the cities named there should be auxiliary offices opened at distances averaging half a mile apart, besides special stations, made necessary by the nature of special interests.

To give an idea of the extent of present facilities in the principal cities, the ollowing statement, showing the number of offices now open, is submitted:

New York	74	offices.
Philadelphia	35	"
Baltimore	19	"
Washington	16	"
Boston	24	"
Chicago	22	"
Cincinnati	21	"

In opening this multitude of offices, and in following up with vigor all the demands of this auxiliary character made upon them, the telegraph companies have been led into a large absorption of their earnings, upon the conviction that what was clearly needed for public convenience it was wisdom at once to provide. Whatever other charges may be brought against the companies, this fact must ever remain unquestioned, that the wires have been led wherever they would add to the public convenience. And it detracts not a whit from this claim to enterprise and prompt submission to the public demands, that in serving commercial and social interests liberally and trustfully, these companies have felt that they were laying the foundations of their own success.

8. How many operators and employés of all sorts would be needed for the main offices in those cities?

Presuming that the force now employed by the different companies represents the number necessary to do the present business, the following table is given:

Whole number of persons employed by all telegraph companies in the following cities:

Cities.	Managers.	Operators.	Clerks.	Messengers.	Total.
New York	5	202	109	168	375
Philadelphia	4	78	43	86	211
Baltimore	4	42	20	48	114
Washington	4	43	30	38	115
Boston	4	58	34	60	156
Chicago	2	36	12	36	86
Cincinnati	3	43	10	37	93

Besides battery men and repairers, and the force employed in the treasurer, auditor, and engineer's offices.

The force of a single main office, having six wires, in a city like New York, would be, for day service, 1 manager, 3 receiving clerks, 8 operators, or 12 if service is continuous; 2 copying clerks, 1 office boy, 1 delivery manager, 3 book-keepers, 16 messengers, 1 battery-man, 1 repairer.

This supposes a terminal office in a large city. The messenger force depends on the range of delivery. The rule being that no boy shall be allowed to take for delivery more than one message, unless for distant delivery, or for the same locality, and shall deliver first that which came first, the number of messengers must depend on the average distance traversed.

When partial night service is required, the force is enlarged one-third.

When the office, ceasing to be terminal, radiates by added wires, or a continuation of the six, the operating force increases accordingly.

Interrogatory No. 9 is embraced in No. 3, and requires no additional answer.

10. Names and capitals of the telegraph companies.

Western Union Telegraph Company	$22,000,000 00
United States	6,000,000 00
(These companies were consolidated April 1.)	
American	4,000,000 00
Russian Extension	10,000,000 00
Bankers and Brokers'	1,200,000 00
Insulated Lines	1,000,000 00
Franklin Telegraph	500,000 00
Illinois and Mississippi	1,500,000 00
Northwestern	1,500,000 00
Missouri and Western	209,500 00
California State	2,500,000 00
Delaware and Hudson	
Delaware, Lackawanna and Western	
Monongahela Valley	40,000 00
Burlington and Missouri River	
Genesee Valley	6,000 00
Philadelphia, Reading and Pottsville	20,000 00
Worcester and Milford	4,500 00
Worcester and Nashua	10,000 00
Vermont and Boston	130,400 00
Cape Cod	32,000 00
Susquehanna River and North and West Branch	46,275 00
Philadelphia and Wilkesbarre	30,000 00
Troy and Canada Junction	47,300 00
Sandy Hook Telegraph Company	25,000 00
Maine Telegraph Company	112,500 00

Capitals not known: Lawrenceburg, Aurora and Vevay; Cooperstown and Richfield Springs; Southern Express; Columbus and Appalachicola; Norfolk and Petersburg; Danville Railroad; Richmond, Charlotte and Stanton; besides a number of small companies in all the States.

11. Amount of gross receipts of each of them during the year 1865, and the average of gross receipts of the Western Union and American for the years 1860, 1861, 1862, 1863, 1864, 1865.

Our knowledge being confined to the operations of the three companies here answering, the reply to the above inquiry is necessarily confined to them.

United States Telegraph Company:

Gross receipts, 1865 ..... $668, 422 26

Western Union Telegraph Company, after consolidation with the New York, Albany and Buffalo, and Atlantic and Ohio Companies:

Gross receipts, 1865 ..... $2, 314, 211 41

American Telegraph Company:

Gross receipts, 1865 ..... $1, 437, 627 21

Average receipts during 1860–'61–'62–'63–'64–'65:

United States, (only * organized August 1, 1864.)

Western Union $993, 849 40
American 916, 000 00

12. What increase of these receipts, (gross,) estimated solely by reason of the war?

This information cannot, without immense labor, be given from the records of telegraph companies.

The United States Company received little or none of the government business, but shared, during a few months, in the activity created by the war.

The American Telegraph Company lost the entire receipts of their southern lines during the war, but the increase of northern business about balanced the southern loss. To do the increased northern business required great outlay for additional wires, &c.

The Western Union Company received an increase of about 25 per cent., but had also to provide facilities therefor at large cost.

13. Net receipts of each of these lines during all of these years. In other words, the profits, whether divided among stockholders, expended in construction of additional lines, or credited to surplus.

Net receipts, &c.:

United States, (loss 1865) $103, 341 18
American—net receipts Jan. 1, 1860, to Dec. 31, 1865 ..... 1, 505, 838 78
Western Union—net receipts Jan. 1, 1860, to Dec. 31, 1865 .. 2, 659, 499 04

14. In case the government should want to buy out the Western Union, American, including its southern lines, and the United States, what would, approximately, be the price?

Acting as the trustees of our stockholders, we cannot affix a selling price to their property, which is in our charge merely to be managed for their benefit.

---

* By consolidation of the United States, Independent, and Inland Telegraph Companies, whose receipts are not known.

15. What amount has been paid by the several companies as damages for mistakes in telegraphing or non-delivery? To what extent are these companies liable? Refer to decisions of courts on the subject.

The amounts paid for damages in the conduct of telegraph business will approximate $100,000, and claims for a like amount remain unsettled, or are being contested.

The decisions of the courts in the several States where suits have been brought have been so various and conflicting, and the court of last appeal having not, as yet, been called to adjudicate any of the claims for damages made against telegraph companies, the measure of liability cannot be stated. A copy of some of these State decisions is provided herewith.

16. In case the government should not buy out the leading companies, what would be their policy in competition with the government lines?

What the policy of the companies would be, were governmental lines now in operation, cannot well be stated. A war against private capital and enterprise, sustained on the part of the government by taxing the commonwealth, would have such elements in it as would make the weakest policy a power. It might be to continue unchanged all its present arrangements, leaving the government to develop its own; or it might be to adopt whatever reduced tariff the government might use in opposition, accepting the challenge thus thrown to them.

It is quite likely that, as trustees of a magnificent enterprise, destined soon to encircle the globe, the officers of these companies would call to use all of the vigor and experience with which twenty years of practice have possessed them to protect unharmed the property of so many who look to it for support, or who pride themselves in having connexion with what may prove the bond of the world's union, and its most powerful means for pacification and progress.

Their policy would undoubtedly be prompted by the instinct of self-preservation.

17. How far will it be practicable to regulate the tariffs of telegraphing messages according to the time to be consumed—that is, on the principle that "time is money?"

It would be difficult to establish any system by which discrimination could be made in favor of one class of messages over another simply on the basis of an increased tariff. State laws generally demand that, in the transaction of telegraph business, "the first to come shall be the first to be served." This rule places all on the same footing, and inspires public confidence. It should not be departed from without some great necessity, such as the public judgment would recognize. In the preference given to messages affecting the escape of fugitives from justice, and to those announcing death or great peril, there is general acquiescence. The instant, however, it became known that money could secure despatch beyond that generally afforded, conveying the idea that preference was procurable by paying for it, the whole system as now established in the public confidence on the simplest and fairest rule would be perilled.

To establish a system which, separated from any proposition of preference, would, nevertheless, pledge despatch within a certain time, requires conditions rendering it not only possible, but uniform. The directions given by all telegraph executives are, to give promise, as to time, to none. For this, there are two prominent reasons.

As the most effective means of increasing business is in expediting it, so the very enlargement of the number of messages renders immediate despatch to all

impossible, and can only be given to the one first received. When it so happens that messages are left in the ratio of the ability of the wires to transmit, (a very unusual thing,) then quick delivery is obtained. But when it is considered that a commercial day, for most of that class of business which depends on telegraphic communication, is limited to about five hours, and to a large class of commercial and speculative business to half that time, it follows, as a matter of course, that even in seasons of usual activity, and especially under the stimulus of any excitement by which markets are disturbed, a flood of business is thrown upon the lines, rendering any promise of despatch in a given time to *any* of them simply impossible. The only remedy for this, and which is the most formidable of the difficulties the companies have to meet, is in such a multiplication of the wires to great commercial centres as shall secure as nearly as possible instant transmission, without violating the fundamental rule of "first come, first served." This we have aimed to provide.

The other reason which debars all promises as to time of delivery is in the character of the lines themselves. The wire working clear and steady one moment may be still and dead the next. As this paper is being written, of the score of wires which connect New York with the far west, not one is working, and the day will be far gone before half of them are restored from the desolation of the last night's sleet and storm. To-morrow, with not a breath of wind to disturb the weakest thread, a locomotive off the track may do in an instant what the storm did last night. To fire at the wire and insulators in certain places is a favorite amusement among crack riflemen. This also, and a thousand other things, in the offices and on the line, by rust, by lightning, by trees, by stupidity and by deviltry, by wind and sleet and flood, render telegraph communication, especially on long lines, a matter of constant uncertainty. There can be no safety in time contracts under such circumstances. Telegraph responsibilities are too weighty now to make it desirable to incur those over the conditions of which the companies can have no absolute control.

One discrimination is possible and fair. A tariff lower than the commercial day tariff may be adopted for all messages which can be transmitted during the night, or after 5 p. m., deliverable at a reasonable hour in the morning. And it may soon be that science may provide such mechanism, and such lines be built, and such clearing of the public roads be made, and such public virtue encircle and protect the telegraphic lines of even the companies which have come by the necessities of self-preservation to be branded as monopolies, as shall secure a celerity of communication now unknown. The companies here answering have gone to the extreme of their ability in providing, without discriminating tariffs, all which the public necessities seemed to demand, and design to continue so to do. The great need of the companies, in view of the interests involved in the multitude of messages intrusted to them for transmission, is *more time* in which to perform their work, and guard themselves and the public alike from the errors incident to a large business crowded into the limits of so short a day as commerce now grants.

In connexion with this matter of time and the portion of it available to us, reference is made to a statement made by Mr. Brown, which requires notice as being one of those sources of error which has, no doubt, led to much of the indignation exhibited by him against the companies.

"The capacity of a line such as that from Washington city to New York, with six wires, and working only half the time, or twelve hours, at an average speed of two thousand words, may be thus set forth: $6 \times 12 \times 2000 \times 365 = 52{,}560{,}000$ words per annum.

"It becomes evident, therefore, that this number of words, fifty-two million five hundred and sixty thousand, divided into the minimum cost of operating the line, $25,694 20, will give the charge per word at which the government could do the public telegraphing without loss. This division results in about

one-twentieth of a cent, or sixty words for three cents, the cost of a postage stamp. The average of business letters, however, will not exceed sixty words, so that from this simple calculation it will appear that the telegraphic charges on ordinary commercial correspondence may be made as inexpensive as the present postal rates. In other words, the post office on wire will be cheaper than the post office on rail."

Now the truth in reference to all this is, that, although it is *possible*, under favorable circumstances, to send 2,000 words per hour, yet it is utterly impossible to send messages requiring care at anything like such an average rate by the present process. On the wires which are kept busiest and work the most uniformly, the average of a skilful operator's work is about 40 messages per hour, and does not exceed 240 per day. This is on what are termed "through" wires, connecting two main points only.

On a wire which is used to accommodate more than two offices, the capacity of transmission has to be divided by the number of towns connected, with a considerable allowance for time lost in changing the use from one office to another. Thus, if a wire from New York to Washington is used to accommodate Philadelphia and Baltimore, their average employment of it will be less than 15 minutes per hour, with an average transmission of less than 10 messages per hour of 10 words each. If Newark, New Brunswick, Trenton, and Wilmington are included, the averages are reduced to a capacity of not over four messages per hour. And yet it is necessary for the operator to remain constantly near his instrument, although he may have but few messages to transmit, in order to be prepared to receive such as are sent to the office under his charge.

Now let the computations of Mr. Brown be examined. He claims a capacity for each wire of 2,000 words per hour. Our experience limits the number to 1,500 for an outside average, but this claim for the present is waived. In a day of twelve hours, therefore, the capacity of each wire is 24,000 words. From this number an allowance of ten free words for the address and signature of each message of sixty words will be granted, leaving a residue of 20,570 words, or 343 messages of sixty words each, which is claimed can be delivered at a cost of 3 cents each, or $10 29 per day for the service of each wire.

Leaving this result for a moment, let the cost of sending these messages be examined. It has been claimed elsewhere that the brain of an operator is not equal to any such strain as that of 12 hours per day on such service. It would break, in six months, the healthiest and toughest organization of nerves usually found in men. It would require, therefore, two men at each end of the wire to do this labor, which, at the ordinary salaries, would be $16 per day, or $5 71 *loss per day on each wire.* If to this be added the cost of manager, receiver, clerk, rent, messenger service, stationery, &c., it will be found that, under the most minimum calculation, the *loss to the government,* with a full service of six wires, would be about *three hundred dollars per day,* or about *one hundred thousand dollars per annum, without the allowance of a single dollar for current repairs or any reservation for ordinary decay, equal to forty thousand dollars more.*

In striking contrast to such a statement is the fact that the telegraph companies upon their gross receipts, and the stockholders upon dividends averaging not over four per cent., have paid to government, during 1865, a tax of *over four hundred thousand dollars.*

Now there is a limit to telegraphic demand. There is also an absorption of the time on the wires which defies computation. Take, for example, New York. The American Company leads to its city offices from the south 28 wires; from the east 33; from the north 3. The Western Union Company brings from the west 18.

On Mr. Brown's theory, therefore, there might reach for delivery in New York, during twelve hours each day, not less than *ninety-eight thousand four hundred* messages, and *an equal number sent therefrom* to other places!

And yet, with this vast provision of wires, all of them in use and reasonably busy, there are received from the whole of New England, from all the large seaboard cities, from Washington, from all of eastern Canada, and from the whole of the southern States, an average of 2,000 messages per day, with an outflow of a corresponding number. And from the whole of the western States, including California, New York, and Pennsylvania, there come for daily delivery only about 1,400.

It is a curious commentary on Mr. Brown's statement that a "letter of sixty words can be sent for *three cents*," that the *actual average cost of delivery alone* at the New York office *exceeds eight cents per message, besides an average of over four cents of a tax thereon, levied by the United States government*, exclusive of all the taxes imposed by States, counties, and towns through which the lines are led! In a *single city* in Ohio, the tax imposed was *four per cent. on cash receipts!*

It ought to be remembered, also, that a multiplication of long messages would defeat the very purpose of the telegraph, which is that of *instant communication*. The chief use of the lines is commercial, and demands *instant despatch*. Messages are short, that time may be gained. It thus happens that, whereas one wire could easily do the work of four or more if the whole day were available, we have to multiply wires to do the business which is, of necessity, crowded into a few of the central hours of the day. This multiplication of wires for commercial purposes has provided ample facilities for social correspondence at other hours, as well as for press business.

The calculation of Mr. Brown, based upon the ability to send a certain number of words per hour, must submit to a serious reduction from the fact that, for every ten words paid for, at least ten more are sent free. Here, for example, is an ordinary message, which fairly represents a large portion of the social business given to us. All that portion of it which is italicized is sent without charge:

No. 71. *New York, April* 26, 1866.

Hon. John B. Robinson,
Willard's Hotel, Washington.

Hope to meet you in the morning at ten o'clock.

Jonathan Bartlett, Astor House.

10 *words, 75 c. paid. Rec.* 2.20.

Thus, in a message where ten words are paid for, *over twenty* are sent free. True, part of the free matter has no value to the parties, but every part is essential to the company in conducting the business, and equally exhausts its time.

Messages such as this, when the weather is steady, pass along rapidly. If the weather, however, becomes heavy, or the atmosphere becomes surcharged with electricity, as is so often the case during the summer, or when storms have deranged the wires, the repetition of words and parts of messages are often demanded. And thus it often happens that a message which, ordinarily, could be sent in a minute, requires five. The use of our wires is also greatly diminished by the almost hourly casualties which happen to them at some portion of the route. The tail of a boy's kite connecting two wires will diminish our facilities for a whole day to the extent of all that one wire could do.

When the message is commercial, treating of large values, the purchase of gold or stocks, in which figures or sums occur, operators are naturally cautious, and transmit with increased care, asking the repetition of all doubtful words. All these things reduce the average of work done. From causes which are by no means unfrequent half of the wires are also thrown out of use, and thus in many ways proving how impossible it is to form a correct judgment of the actual by the possible.

After all these deductions are made, there remain four classes of business which consume a large portion of the time of the lines :

1. The large amount of messages sent each day, called "inquiry messages," relating to the hastening of answers, non-deliveries on account of address, and the numerous causes for correspondence between offices.

2. Despatches between the offices and the auditor's department in the correction of the various reports, the settlement of balances, &c.

3. The correspondence growing out of the general management of the line, its repair, reconstruction, &c.

4. The correspondence of railroad officers, to whom the right of free transmission is given in consideration for rights of way, transportation, &c., &c.

All these form a mass of matter which seriously reduce any estimates of time available for paid business, and which must enter into the calculation of the line's capacity. It is not too much to claim a deduction of at least one-fourth from our available use of the wires from this cause alone.

There is also in the tension of the brain of an operator a limit to all use of the wires when crowded to their capacity. The necessary absorption of the mind is exhausting. To crowd the work beyond a certain rate would require relays of men to relieve each other. Six hours' continuous service of this character is all that a young person is capable of performing and maintain health. A duplicated force, therefore, would have to enter as a part of any calculations of the labor needed for the supposed service.

In view of all these considerations, it must be obvious that nothing short of actual experience derived from daily contact with the service can give the correct data for the solution of all these questions, and that in the employment of the wires, in tariffs, in methods, in courtesies, in everything, intelligent self-interest is the wisest guide.

18. What is the extent of wire, computed as a single wire, of the "Western Union," "United States," and "American," and what is the average per mile of the cost on the basis of capital of each? In answer to this, state, as near as you can, the amounts invested in buildings, offices, &c.; also amounts paid for rents of each. As the government may want equal facilities for its telegraph purposes, I may need the information. Deducting the cost of these from the amount invested in such buildings, &c., or the gross amounts of which the rentals computed at six per cent. interest would make from the actual capital, will leave the residue of the capital as representing the cost of the poles, wires, apparatus, &c.

The length of wire owned by the Western Union and United States companies is 60,000 miles. The average cost, as based on the now united capital, is $450 per mile. This embraces, besides the poles, wires, and apparatus, the following :

Invested in buildings	$95,208 83
Stocks in other companies*	1,429,900 00
Office fittings	360,000 00

The lines of the American Company embrace 30,000 miles of wire. The average cost per mile, based on the capital, is $133 33. This embraces, besides poles, wires, and apparatus, the following :

Invested in buildings, &c	$53,466 80
Office fittings	400,000 00

"You will oblige me, also, by informing me what amount of government tax was paid by your two companies during the year 1865, and its percentage on their gross and net receipts,; also its percentage, as near as you can give it, on

*These stocks are in lines west of the Mississippi, and held for the security of connexion.

the messages transmitted, on the basis of ten words to the message; also the amounts paid for messenger service in delivering messages."

The amount of United States revenue tax paid by the United

States Telegraph Company for 1865 was	$33,115 52
Western Union Telegraph Company for 1865	114,678 25
American Telegraph Company for 1865	71,881 30

Percentage of tax.

United States Telegraph Company on gross receipts	5	per cent.
on messages paid	$4\frac{3}{4}$	cents.
Western Union Telegraph Company, on gross receipts	5	per cent.
on net receipts	$11\frac{1}{8}$	per cent.
on messages paid	6	cents.
American Telegraph Company, on gross receipts	5	per cent.
on net receipts	$23\frac{1}{10}$	per cent.
on messages paid	$3\frac{1}{3}$	cents.

The amount of tax named as paid is exclusive of all those collected by State, county, and town authorities, which in some States approximates that paid to the general government.

Messenger service.

Amount paid to boys for delivery, &c.—

United States Telegraph Company	$43,624 00
Western Union Telegraph Company	63,074 99
American Telegraph Company	86,858 86

These amounts are exclusive of rents and clerk-hire of delivery departments.

The Postmaster General has requested reference to the remarks of Senator Brown respecting the use of the different kinds of machinery for telegraphic purposes, and the comparative rapidity of transmission attainable by them.

The first of these which came into use after that of the Morse system was the House printing instrument. It was a beautiful and ingenious machine, and was hailed as a valuable addition to telegraphic art. Its capacity to print, by the use of a single wire, in clear Roman type, seemed the very perfection of machinery, and could leave nothing more to be desired. In point of rapidity, it seemed, also, to have superior capacity.

The structure of such an instrument, however, was necessarily complex. It had delicate adjustments. Its magnets had to work with ten times the rapidity of the Morse relay. Two men were needed to work it; thus employing four men in the use of a single wire, two at each terminus. It was expensive, costing from three to *five hundred dollars*, and it was noisy.

Still, it was well adapted for use between two large cities, and House printing instruments, much improved since their first introduction, although reduced in their capacity for speed, have been in constant use between cities of the seaboard, and especially between New York and Washington. They are used chiefly for the transmission of press despatches, where, by the Morse mode, much laborious penmanship was necessary. In the improved condition in which they are now used, they are, in fact, what are known as the "combination instruments," and in which, by submitting to a reduction of speed, greater simplicity and reliability are secured. Indeed, greater average rapidity was attained thereby, inasmuch as the very delicacy which gave speed exposed the machine to derangement, and consequent interruption equivalent to delay.

For the purposes for which they are employed these instruments are highly esteemed, but their use for sending ordinary despatches has almost entirely ceased. For general use they are not at all adapted, both because of their ex-

pense, and the necessary delicacy of the parts, which would require such mechanical care as would embarrass the companies in procuring the requisite corresponding ability to work them.

The "Bain" machine was, at one time, introduced to rather extensive use, but now, with one exception, is entirely laid aside. It was manipulated by a key exactly as the Morse system, and was used chiefly because by it an opposition to existing lines was possible. And yet it had one element which was really valuable. It required no machinery exposed to outside electric influences. It needed no magnet, required no adjustment, and in a rivalry of poorly constructed or carelessly insulated lines often had a decided advantage. All that was needed was to reach an office with the current of the battery, however attenuated, and the record made by the passage of the current through an ordinary sewing needle, whose point rested on chemically-prepared paper, revolving on a metallic disk, was secured. This record was effected by the corrosion of the needle point at the point of contact caused by the joint action of the electric current, and the moist chemicals of the paper on the disk producing a blue mark in all respects similar to that secured by indentation from the stilus of the moving arm of the Morse register. The manipulations of both are alike, the "Bain" having the advantage of requiring no adjustment, and, of course, no repetitions. Since then, however, so great has the advantage been found of receiving by sound alone, and discarding all mechanical registries which required translation—so great the relief from winding machinery, and handling the long paper ribbon and the wet sheets of the Bain disk, that, to a large extent, the Morse register and the entire Bain system have been laid aside.

That which brought the Bain system prominently before the public mind at one time was its capacity for very rapid transmission, and to which it undoubtedly has a legitimate claim. Having no motion to produce in order to form a record, and the electric current being susceptible of use in meeting the requisitions of any speed required, two elements only remained necessary. These were a machine capable of rapidly manipulating the characters at one end, and a disk of equivalent rapidity of motion at the other. The former was secured by perforating a strip of paper with the forms of the letters to be transmitted, recording thus in perforated characters the message to be sent, and making it to pass rapidly beneath a stilus connected with the wire of the line. A drum, on which was wound the chemically-prepared paper, moving at a rate corresponding with the speed of the manipulating or transmitting machine, easily received the matter sent. In this capacity of the Bain machine there are elements of marked value, but the companies, owing to the absence of perforating machinery, the delay and cost of using such appliances, have not yet deemed it of advantage to call them into use. Improvements of this principle, with a perforating machine capable of rapid execution, are, however, occupying some attention, and may become useful. Practically, up to this time, no machine has increased the facilities for rapid communication beyond the nimble manipulation of the operator's finger, and the simple magnet which strikes out the hieroglyphic alphabet to the ear. Adapted, by its simplicity, effectiveness, and cheapness, to a system which has in active service at least ten thousand of them in all parts of the land, easy of repair and easily learned, the machinery now used has secured universal favor, and by it alone could the telegraph have been introduced so rapidly to the very extremes of civilization.

A new printing instrument, of French invention, for which great capacity is claimed, is now receiving the attention of the companies.

Possible rate of transmission by the Morse system, per hour, 1,500 words.

Bain machine, ordinary, 1,500 words.

House printing machine, 2,300 words.

Combination printing machine, 2,000 words.

Respecting the effect of the construction of a government line on facilities for

the press, Mr. Brown says: "The monopolies that now control the dissemination of news to the public press, by controlling the lines, would be broken up, and newspaper enterprise would be thrown open to the whole country instead of being concentrated in the hands of a few journals in the city of New York. Moreover, it would then be possible, which now it is not, to supply the country, at its great commercial centres, with a correct abstract of the proceedings of Congress at a trifling cost, and with infinite advantage to the nation."

This extract from Mr. Brown's address being aimed chiefly against a so-called newspaper "monopoly," should receive its answer, perhaps, from that source. Still, as the existing telegraph companies are represented as the chief means by which the newspaper "monopoly" is sustained, and as press business forms a very important part of telegraphic labor, it falls legitimately within the scope of these replies.

It has been thought by the companies that to the press, at least, the most liberal policy had been pursued. The charges to the papers in the leading seaboard cities average less than one-fourth of the ordinary commercial rates. As all the matter sent by the agent of the associated press is received as a single despatch at each city, and the cost is equally divided among all the papers taking it, the average cost does not amount to a twentieth part of the commercial tariff. In New York the tariff to each paper does not exceed *half a cent* per word. In this arrangement Mr. Brown can, perhaps, see the objects of the combination which he terms a monopoly. It is simply a plan by which the cost of transmitting the bulk of congressional news is reduced to the several parties receiving it.

On exactly the same terms do the several New York papers receive their special despatches, compiled by their own correspondents. These, sent direct to a single paper, of course cost more than where all bear their portion under the arrangements of the association, yet average less than one-quarter of ordinary rates.

On business to the western States the terms are still more easy, and are made so, largely, by this very combination.

Thus, in the State of New York, from New York to Buffalo, an association of the press exists, having in view the very same object as the one in New York—that of cheapening the cost and making it possible to receive a large quantity of telegraphic matter which, separately, would be impossible. Under this arrangement *ten hours each day* are given up solely for the use of the thirty-five presses forming the organization, furnishing an immense amount of matter at a cost not exceeding an average of *one cent per thirty words*. Without this press combination, by which these thirty-five members of it are supplied by the transmission of a single despatch dropped at each commercial centre at the same time, this telegraph matter could not be supplied. A computation of the expenses connected with this service shows that the profit to the telegraph company for this labor of ten hours per day, by eight men employed solely for that purpose, and ten others partially so, does not exceed the salary paid to any one of these employés. More liberal terms, more copious supply, more general contentment in both the terms and execution of this mutual arrangement, could not enter into the details of any agreement. No government line could unite and supply and satisfy so many parties.

And what is true of the State of New York is true, substantially, of States beyond, wherever an approach to like conditions is found; and with a fair reference to increased distance and labor, all of these advantages every paper willing to bear its share of the common expenses has the privilege of receiving.

And here it is necessary to say that no press, or combination of presses, or any individual in the press or out of it, except the officers of the companies subscribing hereto, have any control of the lines they represent.

If ever there was a thing which appealed more than another to the cupidity

or means of enrichment of the telegraph companies, it is the utter breaking up of all press arrangements now existing, thus giving the opportunity to wealthy establishments to monopolize the news. Were they to do this, while the companies would appear to open their lines to all alike, they would, practically, destroy three-fourths of all the papers now deriving value from their access to associated press reports by a tariff they could not singly bear.

Rich presses would then rule and be forever dominant, while the profits of the companies controlling the lines would be largely increased, with perhaps a reduced service both in time and labor.

The chief defects in the arrangements of the western press is one which neither the associated press nor the telegraph company can supply; yet it is that very feature which gives prominence and power to the metropolitan press.

The New York papers sustain at Washington and other places, both in the United States and in Europe, correspondents, editors in fact, who supply by mail and telegraph that class of information, gossip, and speculation suited to the tone of the paper they represent.

In one of the morning issues of a New York paper, out of ten thousand words of telegraphic matter full one-half will be that sent by this Washington editor, all bristling with point, and full of that epigrammatic sharpness and pen-and-ink sketch of individuals which, above all other matter, is lifelike and readable. All this feature is, necessarily, carefully kept from the general report, which is required to be one of simple fact, prepared, as it is, for presses representing every shade of politics and every peculiarity of taste.

To supply this distinguishing feature of the metropolitan press is beyond the means of a large majority of the western papers, unless in some associated capacity which the parties in interest have not yet shown any desire to form.

Yet in the provision of such a want, how futile would be any attempt of a government line to meet the wants of the case! Nothing can be imagined which would more squarely stultify every public instinct. Even of those who might be expected to benefit most largely from a system under government management and espionage, the acknowledgment of its utter impolicy and uselessness would, with few exceptions, be prompt and positive.

When this want shall seek associated supply, the companies will, no doubt, be able to meet it to an extent consistent with their facilities, and with the same liberality which has entered into all their press arrangements.

The statement that these companies "will let no one but the associated press send any special despatches or news to any paper except from Washington or Albany" is utterly incorrect. No arrangement has ever been made by telegraph companies and the press which did not reserve the right, constantly exercised, of giving the same terms to other private parties under similar conditions.

The leading elements of opposition to this project of the government are very correctly stated by Mr. Brown as being—

1. The belief that such undertakings are safest when left to be carried out by private enterprise.

2. That government could not inaugurate an opposition to the existing companies without greatly depreciating or destroying the value of investments therein.

The former of these is so germane to our institutions, and so in harmony with the public judgment, as to seem to require no new assertion of its truth. The position taken by Mr. Brown, in opposing its application to the case in hand, is based on a state of seeming facts which are elsewhere proven to be of a totally different character to that which has been assigned to them.

The latter is equally clear, yet enters so much deeper into the demoralization of these companies than is at first apparent, that it seems not only proper, but a duty to those who have carried on these great enterprises thus far, that the

probable injury to them, should government energetically carry out the proposed scheme, be fully shown.

Mr. Brown says: "I will only say that, whenever the government shall begin the construction of telegraph lines, it will be time enough to ascertain truthfully the losses that individuals may thereby sustain."

To estimate the value of property under such circumstances seems scarcely the position which a popular government can take in treating with its citizens. The stock of these companies is held by nearly five thousand persons in all parts of the country. The depressing effect of the commencement of the construction of government lines cannot fail to be marked and deep. It must cause a very general sacrifice of stock, because it would be apparent that none of the ordinary elements of such a contest between private companies would enter into this. Private rivalry has shown already how destructive it is to both contestants. The government, however, would enter the field under very different circumstances. Depending for its existence on no sufficient revenues, and built without appeal to the public for capital, it would not rival, but dominate. General apprehension, and the depreciation of all investments in these companies, must inevitably follow.

In other respects, however, the embarrassment would be felt still more.

It would be most damaging to the status of these companies in connexion with other enterprises. This interference by government would weaken them in all their contracts with railroad companies, and other parties, on which much of their early success was based. Chiefly would it weaken them in connexion with those gigantic undertakings which are now drawing toward them the animated interest and sympathy of the civilized world.

A private company, composed of citizens of both hemispheres, will soon have demonstrated the great problem of distant sub-oceanic communication. As they leave the shores of England, the guns of every fort will utter the parting benediction of government and people. These sounds will be to them inspirations of success. They will expect to meet *us*, also, as they offer the ligament of iron which is to bind the Old World to the New in the marriage of a mutual victory, strong in the confidence of *our* government and people. They will not expect to see on these shores, where manhood has received its broadest recognition, men compelled to welcome the offered hand of Europe beneath the shadow of a great "threat." Can it fail to humiliate us thus to receive our coming guests?

And on our western shores, up to the Arctic seas, through the territories of Great Britain and Russia, by paths where human footsteps have never trod; away beneath the icebergs where they build themselves in polar seas; along the bleak coasts of Siberia, towards the rivers that open up Russia and northern Asia to the Pacific, and up by the Kremlin to the Baltic, there is building another bond which will soon inaugurate the wedding of the world. Russia and England encourage our citizens in this great work. The telegraphs of Russia will soon be complete to the Pacific, ready for the connexion with our own, under contracts with the Western Union Telegraph Company, which have been the labor of years to secure and perfect.

But what shall become of all this, if, weakened in her home property, government compels the Western Union Company to enter feeble and emasculated the territories of other nations, or compels it to abandon all the advantages secured by infinite labor and patience in connexion with this vast work?

And yet this is what the government project must certainly accomplish, defeating in the hands of others what it cannot itself accomplish, making great values valueless, and forever rendering impossible any great undertaking which it can seize the instant that private enterprise has brought it to triumphant completeness and success.

Having thus furnished answers to the interrogatories of the Postmaster General as fully as the brief time allowed for doing so has permitted, the necessary haste in their preparation must apologize for any want of perspicuity they exhibit.

There cannot fail to have been impressed upon the mind of the public officer to whom these papers are addressed a sense of the magnitude of the interests to which they refer, and with what wonderful rapidity they have sprung into existence.

In a very few years the whole national territory has been netted with wires, and the extremes of civilization placed in communication.

At first, capital was invested in the building of lines by a few wealthy men who expected no success from the enterprise, and gave their means for an experiment of little promise and of doubtful value. A year or two, however, served to awake all to its importance, and the building of telegraph lines became at once the most promising of enterprises. Telegraph contractors were hailed as public benefactors—builders of the "highway of thought." Now, with property represented by nearly forty millions of dollars; with nearly six thousand persons engaged in its labor; with numerous families dependent upon its success; with much learned and much to learn, the system is brought to the bar of the nation charged with practices requiring governmental interference and substitution to protect the public from "extortion" and the abuse of power.

Perhaps it is well that this public arraignment should come at this juncture, just as the leading elements are granulating, preparatory to the girdling of the world, to which reference has already been made in the progress of these answers. It may reveal much that has been the offspring of erroneous hope or of personal ambitions which more or less mar all great public enterprises. But it may also prove that the work of assimilation to all the phases of public necessity is steadily advancing, and that even the processes which now give so much offence, and seem like attempts to absorb the vitality of a great and wondrous system for purposes of mere power or extortion, are, in reality, necessities for carrying to successful fruition the greatest achievement of our times.

AMERICAN TELEGRAPH CO.,
By EDWARD S. SANFORD, *President.*
WESTERN UNION TELEGRAPH CO.,
By J. H. WADE, *President.*
UNITED STATES TELEGRAPH CO.,
By WILLIAM ORTON, *President.*